

CLAIMS:

1. A high-pressure fuel injection pipe having a connecting head, comprising: a thick steel pipe having a relatively small diameter and provided at its connecting end portion with a connecting head having an outer circumference formed into a seat face of either a frustum shape or a frustum shape having a spherical leading end portion for a mating seat portion, such that an annular groove formed in the inner side of said connecting head in accordance with the shaping of said head is made shallow and gentle; and a connecting washer fitted on the outer circumference of the lower neck portion of said connecting head,

wherein said connecting head is provided on the outer circumference of its lower neck portion with an at least two-stepped portion, and

wherein said connecting washer is provided with a stepped portion corresponding at least partially to the stepped portion of said connecting head, so that the stepped portions may abut against each other.

2. The high-pressure fuel injection pipe having a connecting head according to Claim 1,

wherein the stepped portion formed on the back face of said connecting head has an angle of inclination θ of 20 degrees to 50 degrees with respect to the pipe axis.

3. The high-pressure fuel injection pipe having a connecting head according to Claim 1,

wherein the stepped portion formed on the back face of said connecting head has two to five steps.

4. The high-pressure fuel injection pipe having a connecting head according to Claim 1,

wherein said connecting washer is of either an integral type or a split type including a plurality of thin sleeves having different diameters.

5. The high-pressure fuel injection pipe having a connecting head according to Claim 1,

wherein said thick steel pipe is made of a carbon steel material or a stainless steel material for the high-pressure fuel injection pipe.

6. The high-pressure fuel injection pipe having a connecting head according to Claim 1,

wherein said thick steel pipe has sizes of a diameter of 4 mm to 20 mm and a thickness of 1 mm to 8 mm.

7. The high-pressure fuel injection pipe having a connecting head according to Claim 1,

wherein said connecting washer has an axial length of about 0.4 times to 1.5 times as large as the pipe diameter.

8. A high-pressure fuel injection pipe having a connecting head comprising: a thick steel pipe having a relatively small diameter and provided at its connecting end portion with a connecting head having an outer circumference formed into a seat face of either a frustum shape or a frustum shape having a spherical leading end portion for a mating seat portion, such that an annular groove formed in the inner side of said connecting head in accordance with the shaping of said head is made shallow and gentle; and a connecting washer fitted on the outer circumference of the lower neck portion of said connecting head, characterized: in that said connecting washer is eliminated but a connecting washer portion is integrated with a fastening nut; in that said connecting head is provided on the outer circumference of its lower neck portion with an at least two-stepped portion; and in that the connecting washer portion of said fastening nut is provided with a stepped portion corresponding at least partially to the stepped portion of said connecting head, so that the stepped portions may abut against each other.

9. The high-pressure fuel injection pipe having a connecting head according to Claim 8,

wherein the stepped portion formed on the back face of said connecting head has an angle of inclination θ of 20 degrees to 50 degrees with respect to the pipe axis.

10. The high-pressure fuel injection pipe having a connecting head according to Claim 8,

wherein said thick steel pipe is made of a carbon steel material or a stainless steel material for the high-pressure fuel injection pipe.

11. The high-pressure fuel injection pipe having a connecting head according to Claim 8, wherein said thick steel pipe has sizes of a diameter of 4 mm to 20 mm and a thickness of 1 mm to 8 mm.